

## WHAT IS CLAIMED IS:

1. A user interface control apparatus for avoiding a conflict that occurs between setup data for a predetermined object to be controlled, which are input via a user interface, comprising:
  - storage means for storing conflict process rules that indicate conflict avoidance descriptions;
  - complementary rule generation means for generating complementary rules that indicate complementary conflict avoidance descriptions on the basis of the conflict process rules stored in said storage means; and
  - update means for updating the input setup data in accordance with the conflict process rules and the complementary rules.
2. The apparatus according to claim 1, wherein when said storage means stores a plurality of conflict process rules for one state of one function of the object to be controlled having two states, and does not store any conflict process rule for the other state, said complementary rule generation means generates inverse logic of the conflict process rules for the one state as complementary rules to conflict process rules for the other state.
- 25 3. The apparatus according to claim 1, wherein said storage means stores the conflict process rules as a conflict process rule description file.

4. The apparatus according to claim 3, wherein the conflict process rule description file is described in accordance with a predetermined markup language.
5. The apparatus according to claim 4, wherein the conflict process rule description file describes local rules which can be applied to only a specific object to be controlled, and a universal rule description file that describes universal rules which can be commonly applied to a plurality of objects to be controlled is externally referred to.  
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6. The apparatus according to claim 3, wherein the conflict process rule description file contains a description of an update command of the user interface.
7. The apparatus according to claim 3, wherein said complementary rule generation means further comprises means for additionally writing the generated complementary rules in the conflict process rule description file.  
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8. The apparatus according to claim 1, further comprising means for informing that the setup data have been updated upon applying the conflict process rules or the complementary rules by said update means.  
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9. The apparatus according to claim 1, wherein the object to be controlled is an image forming apparatus.
- 25 10. A user interface control method for avoiding a conflict that occurs between setup data for a

predetermined object to be controlled, which are input via a user interface, comprising:

- the complementary rule generation step of referring to a conflict process rule description file
- 5       that describes conflict process rules that indicate conflict avoidance descriptions, and generating complementary rules that indicate complementary conflict avoidance descriptions on the basis of the conflict process rules; and
- 10      the update step of updating the input setup data in accordance with the conflict process rules and the complementary rules.
11.     The method according to claim 10, wherein the complementary rule generation step includes the step of generating, when the conflict process rule description file describes a plurality of conflict process rules for one state of one function of the object to be controlled having two states, and does not describe any conflict process rule for the other state, inverse logic of the conflict process rules for the one state as complementary rules to conflict process rules for the other state.
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12.     The method according to claim 10, wherein the conflict process rule description file is described in accordance with a predetermined markup language.
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13.     The method according to claim 12, wherein the conflict process rule description file describes local

rules which can be applied to only a specific object to be controlled, and a universal rule description file that describes universal rules which can be commonly applied to a plurality of objects to be controlled is  
5 externally referred to.

14. The method according to claim 10, wherein the conflict process rule description file contains a description of an update command of the user interface.

15. The method according to claim 10, wherein the  
10 complementary rule generation step further comprises the step of additionally writing the generated complementary rules in the conflict process rule description file.

16. The method according to claim 10, further  
15 comprising the step of informing that the setup data have been updated upon applying the conflict process rules or the complementary rules in the update step.

17. A program for making a computer implement a user interface control method for avoiding a conflict that  
20 occurs between setup data for a predetermined object to be controlled, which are input via a user interface, comprising:

a program code of the complementary rule  
generation step of referring to a conflict process rule  
25 description file that describes conflict process rules that indicate conflict avoidance descriptions, and generating complementary rules that indicate

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complementary conflict avoidance descriptions on the basis of the conflict process rules; and

a program code of the update step of updating the input setup data in accordance with the conflict  
5 process rules and the complementary rules.

18. The program according to claim 17, wherein the program code of the complementary rule generation step includes the step of generating, when the conflict process rule description file describes a plurality of  
10 conflict process rules for one state of one function of the object to be controlled having two states, and does not describe any conflict process rule for the other state, inverse logic of the conflict process rules for the one state as complementary rules to conflict  
15 process rules for the other state.

19. The program according to claim 17, wherein the conflict process rule description file is described in accordance with a predetermined markup language.

20. The program according to claim 19, wherein the conflict process rule description file describes local rules which can be applied to only a specific object to be controlled, and a universal rule description file that describes universal rules which can be commonly applied to a plurality of objects to be controlled is  
25 externally referred to.

21. The program according to claim 17, wherein the conflict process rule description file contains a description of an update command of the user interface.
22. The program according to claim 17, wherein the 5 program code of the complementary rule generation step further comprises a program code of the step of additionally writing the generated complementary rules in the conflict process rule description file.
23. The program according to claim 17, further 10 comprising a program code of the step of informing that the setup data have been updated upon applying the conflict process rules or the complementary rules in the update step.
24. A storage medium that stores a program for making 15 a computer implement a user interface control method for avoiding a conflict that occurs between setup data for a predetermined object to be controlled, which are input via a user interface, storing:
  - a conflict process rule description file that describes conflict process rules that indicate conflict avoidance descriptions;
  - a program code of the complementary rule generation step of referring to the conflict process rule description file, and generating complementary 25 rules that indicate complementary conflict avoidance descriptions on the basis of the conflict process rules; and

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a program code of the update step of updating the input setup data in accordance with the conflict process rules and the complementary rules.

25. An information processing apparatus comprising:
- 5       means for executing a basic process for matching setup conditions with each other;
- generation means for generating complementary process rules that complement the basic process so as to match the setup conditions; and
- 10      control means for matching the setup conditions in accordance with the basis process and complementary process rules, and determining control parameters based on the conditions.
26. The apparatus according to claim 25, wherein said
- 15      control means determines the presence/absence of a conflict between setup conditions, which are input from input means for inputting the setup conditions, and applies the basic process and the complementary process rules to determine control parameters if any conflict
- 20      is detected.
27. The apparatus according to claim 25, further comprising:
- interface means for visualizing the setup conditions; and
- 25      display control means for displaying the conditions determined by said control means on said interface means.

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28. The apparatus according to claim 27, wherein said display control means informs that the setup conditions have been changed upon applying the basic process and the complementary process rules by said control means.
- 5 29. An image forming apparatus comprising:  
an information processing apparatus cited in  
claim 25; and  
image forming means for determining control  
parameters which are input to said information  
10 processing apparatus and are used to form an image, and  
forming image information on the basis of the  
determined control parameters.
30. The apparatus according to claim 29, wherein said image forming apparatus includes a printer and  
15 facsimile.
31. An information processing method comprising:  
the step of executing a basic process for  
matching setup conditions with each other;  
the generation step of generating complementary  
20 process rules that complement the basic process so as  
to match the setup conditions; and  
the control step of matching the setup conditions  
in accordance with the basic process and complementary  
process rules, and determining control parameters based  
25 on the conditions.
32. The method according to claim 31, wherein the control step includes the step of determining the

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presence/absence of a conflict between setup conditions, which are input from the input step of inputting the setup conditions, and applying the basic process and the complementary process rules to determine control parameters if any conflict is detected.

5        33. The method according to claim 31, further comprising:

            the interface step of visualizing the setup conditions; and

10        the display control step of displaying the conditions determined by the control step in the interface step.

15        34. The method according to claim 33, wherein the display control step includes the step of informing that the setup conditions have been changed upon applying the basic process and the complementary process rules by the control step.

35. A program for making a computer implement an information processing method, comprising:

20        a module for executing a basic process for matching setup conditions with each other;

            a generation module for generating complementary process rules that complement the basic process so as to match the setup conditions; and

25        a control module for matching the setup conditions in accordance with the basis process and

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complementary process rules, and determining control parameters based on the conditions.

36. The program according to claim 35, wherein said control modules determines the presence/absence of a conflict between setup conditions, which are input from an input module for inputting the setup conditions, and applies the basic process and the complementary process rules to determine control parameters if any conflict is detected.

10 37. The program according to claim 35, further comprising:

an interface module for visualizing the setup conditions; and

15 a display control module for displaying the conditions determined by said control module in said interface module.

38. The program according to claim 37, wherein said display control module informs that the setup conditions have been changed upon applying the basic 20 process and the complementary process rules by said control module.

39. A computer readable storage medium that stores a program module used to make a computer implement an information processing method, said program module 25 comprising:

a module for executing a basic process for matching setup conditions with each other;

a generation module for generating complementary process rules that complement the basic process so as to match the setup conditions; and

- 5       a control module for matching the setup conditions in accordance with the basis process and complementary process rules, and determining control parameters based on the conditions.

40.      A user interface control apparatus for avoiding a conflict that occurs due to setup information, which is  
10     input via a user interface that can input setup information for a predetermined object to be controlled, comprising:

- storage means for storing conflict process rules indicating conflict avoidance strategies; and  
15     update means for updating related setup information by applying the conflict process rules on the basis of the input setup information,

said update means comprising:

- 20     detection means for detecting setup information to be changed by applying the conflict process rules; and

setup information change means for changing only the detected setup information.

41.      The apparatus according to claim 40, further  
25     comprising informing means for informing that the setup information has been changed by said setup information change means.

42. The apparatus according to claim 40, wherein the object to be controlled is an image forming apparatus.

43. A user interface control method for avoiding a conflict that occurs due to setup information, which is  
5 input via a user interface that can input setup information for a predetermined object to be controlled, comprising:

the detection step of referring to a conflict process rule description file that describes conflict  
10 process rules indicating conflict avoidance strategies, and detecting setup information to be changed by applying the conflict process rules; and

the setup information change step of changing only the detected setup information.

15 44. The method according to claim 43, further comprising the informing step of informing that the setup information has been changed in the setup information change step.

45. The method according to claim 43, wherein the  
20 conflict process rule description file can contain a description of a control command which restricts a change in predetermined setup information, and

the detection step comprises the step of restricting a change in corresponding setup information  
25 in accordance with a control command read out from the conflict process rule description file.

46. A program for making a computer implement a user interface control method for avoiding a conflict that occurs due to setup information, which is input via a user interface that can input setup information for a predetermined object to be controlled, comprising:

5 a program code of the detection step of referring to a conflict process rule description file that describes conflict process rules indicating conflict avoidance strategies, and detecting setup information 10 to be changed by applying the conflict process rules; and

a program code of the setup information change step of changing only the detected setup information.

47. The program according to claim 46, further 15 comprising a program code of the informing step of informing that the setup information has been changed in the setup information change step.

48. A storage medium that stores a program for making a computer implement a user interface control method 20 for avoiding a conflict that occurs due to setup information, which is input via a user interface that can input setup information for a predetermined object to be controlled, storing:

25 a program code of the detection step of referring to a conflict process rule description file that describes conflict process rules indicating conflict avoidance strategies, and detecting setup information

to be changed by applying the conflict process rules;  
and

a program code of the setup information change  
step of changing only the detected setup information.